

CLAIMS

[0045] We claim:

1    1. An equalizing meter apparatus operable to equalize a delivery of granular product  
2    by a pre-assembled meter roller assembly of an agricultural implement between a meter  
3    box and a plurality of product distributors, the equalizing meter apparatus comprising:  
4                 a plurality of fluted metering sections rotatably mounted on a shaft, wherein each  
5    fluted metering section includes a plurality of radial outward fluted segments configured  
6    to meter the delivery of the granular product to at least one of the plurality of product  
7    distributors; and  
8                 an equalizing apparatus having a plurality of inward protrusions configured to  
9    engage the plurality of the fluted segments of the metering section, wherein the  
10   equalizing apparatus is selectively detach and reconnect to the metering section of the  
11   pre-assembled meter roller assembly.

1    2. The equalizing apparatus as recited in claim 1, wherein the equalizing apparatus  
2    further includes a fastener and a fastener opening, the fastener configured to extend  
3    through the fastener opening in the equalizing apparatus and engage the metering section.

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1    3. The equalizing apparatus as recited in claim 1, further including a split ring  
2    having a first free end and a second free end, the split ring configured to secure to the  
3    metering section.

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1    4.     The equalizing apparatus as recited in claim 3, wherein the first and second free  
2    ends of the split ring are configured to couple with each other, the coupled free ends  
3    defining a dovetail joint.

1    5.     The equalizing apparatus as recited claim 3, further including fastener and a  
2    fastener opening, the fastener opening extending through the first and second free ends of  
3    the split ring, the fastener opening configured to receive the fastener, the fastener  
4    coupling the first and second free ends of the split ring.

1    6.     The equalizing apparatus as recited in claim 3, further including an fastener and a  
2    fastener opening, the fastener opening extending through the first and second free ends of  
3    the split ring, wherein the first and second free ends of the split ring are configured to  
4    couple and define a dovetail joint that secures the split ring to the metering section, and  
5    wherein the fastener extends through the fastener opening in the split ring such that the  
6    fastener secures the dovetail joint defined by the free ends of the split ring.

1    7.     The equalizing apparatus as recited in claim 6, wherein the fastener is a self-  
2    tapping screw configured to extend beyond the fastener opening through the split ring  
3    and engage the metering section.

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1       8. An agricultural seeding implement, comprising:  
2              a frame operable to be towed by a tow vehicle;  
3              a product tank mounted on the frame and configured to retain a supply of granular  
4          product;  
5              a conveyance system operable to convey the supply of granular product;  
6              a meter box operable to receive the supply of granular product;  
7              a granular product distributor configured to distribute the granular product in an  
8          agricultural setting;  
9              a meter roller assembly configured for metering granular product delivery  
10         between the meter box and the product distributors, the meter roller assembly including:  
11              a shaft configured to rotate in the meter box; and  
12              a plurality of roller sections rotatably mounted on the shaft, the plurality of roller  
13          sections including at least one fluted metering section corresponding to at least one of the  
14          plurality of product distributors, wherein the at least one fluted metering section includes  
15          a plurality of fluted segments; and  
16              an equalizing apparatus having at least one protrusion configured to engage the  
17          plurality of fluted segments of the fluted metering section,  
18         wherein the equalizing apparatus is operable to detach from and re-connect on the  
19          metering section without disassembly of the meter roller assembly.

1       9. The agricultural seeding implement as recited in claim 8, wherein the equalizing  
2          apparatus includes a split ring, the split ring configured to encircle the at least one fluted  
3          metering section of the meter roller assembly.

1       10.     The agricultural seeding implement as recited in claim 9, wherein the equalizing  
2     apparatus further includes a fastener and a fastener opening, the fastener extending  
3     through the split ring, the fastener opening configured to receive the fastener, the  
4     fastener configured to extend through the opening and engage the fluted metering section  
5     of the meter roller assembly.

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1       11.     The agricultural seeding implement as recited in claim 9, wherein the equalizing  
2     apparatus includes a fastener and split ring, wherein the split ring includes a fastener  
3     opening configured to receive the fastener, and wherein the fastener is configured to  
4     secure a position of the split ring relative to the fluted metering section of the meter roller  
5     assembly.

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1       12.     The agricultural seeding implement as recited in claim 11, wherein the split ring  
2     includes a pair of free ends configured to couple with a dovetail joint to secure the split  
3     ring to the metering section, and wherein the fastener opening extends through the  
4     fastener opening of the split ring, the fastener securing free ends the dovetail joint.

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1       13.     The agricultural seeding implement as recited in claim 12, wherein the fastener is  
2     self-tapping into the opening in the split ring.

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1    14.    A method of constructing a metering system, the metering system including a pre-  
2    assembled plurality of fluted meter sections mounted on a shaft and secured by a fastener,  
3    the method comprising the steps of:  
4                 attaching an equalizing meter apparatus on one or more of the plurality of fluted  
5    meter sections pre-assembled on the shaft;  
6                 securing a position of the equalizing meter apparatus on the one or more fluted  
7    meter sections;  
8                 detaching the equalizing meter apparatus from the one or more fluted meter  
9    sections without disassembling the metering system; and  
10                re-connecting the equalizing meter apparatus to the pre-assembled fluted meter  
11    sections.

1    15.    The method as recited in claim 14, wherein the equalizing meter apparatus further  
2    includes a split ring, and wherein the step of attaching the equalizing meter apparatus  
3    comprises:  
4                 separating a pair of free ends of the split ring to receive the pre-assembled fluted  
5    meter section; and  
6                 attaching the split ring around the pre-assembled fluted meter section.

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1       16.     The method as recited in claim 15, wherein the split ring further includes a first  
2     end and a second end configured to couple to each other, and the act of attaching the  
3     equalizing meter apparatus comprises:

4                 coupling the free ends of the equalizing meter apparatus, wherein the coupled free  
5     ends of the split ring define a dovetail joint.

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1       17.     The method as recited in claim 16, wherein the equalizing meter apparatus further  
2     includes a fastener and a fastener opening, the fastener opening extending through the  
3     dovetail joint defined by the first and second free ends of the split ring, the fastener  
4     opening configured to receive the fastener, and wherein the step of securing a position of  
5     the equalizing meter apparatus includes inserting the fastener through the fastener  
6     opening of the split ring, the fastener securing the dovetail joint defined by the free ends  
7     of the split ring.

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1       18.     The method as recited in claim 14, wherein equalizing meter apparatus further  
2     includes a fastener and a split ring having a fastener opening extending therethrough, the  
3     fastener opening configured to receive the fastener, and wherein the step of securing the  
4     position of the equalizing meter apparatus comprises:

5                 inserting the fastener through the fastener opening in the split ring; and

6                 extending the fastener beyond the fastener opening in the split ring;

7                 engaging the pre-assembled fluted meter section with the fastener, the fastener  
8     securing the position of the equalizing meter apparatus relative to the pre-assembled  
9     fluted meter section.

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1       19.     The method as recited in claim 18, wherein the equalizing meter apparatus further  
2     includes a fastener and a split ring, the split ring having a pair of free ends and a plurality  
3     of inward protrusions, the pair of free ends having a fastener opening extending  
4     therethrough and configured to receive the fastener, and wherein the step of attaching the  
5     equalizing meter apparatus comprises:

6                 separating the free ends of the split ring to receive the pre-assembled fluted meter  
7     section therebetween; and

8                 engaging the pre-assembled fluted meter section with the plurality of inward  
9     protrusions, and wherein the step of securing the position of the equalizing meter  
10   apparatus comprises:

11                 inserting the fastener into the fastener opening in the free ends of the split ring;  
12                 extending the fastener beyond the opening in the split ring; and  
13                 engaging the fastener with the pre-assembled fluted meter section such that the  
14   fastener secures the position of the split ring on the fluted meter section.